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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/589,149	06/08/2000	Jurgen Schulz-Harder	A-7052	1064

20741 7590 04/09/2002

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EXAMINER

RHEE, JANE J

ART UNIT	PAPER NUMBER
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1772

DATE MAILED: 04/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/589,149

Applicant(s)

SCHULZ-HARDER, JURGEN

Examiner

Jane J Rhee

Art Unit

1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-52 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 27-52 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 30, 47, 51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 27-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schulz-Harder in view of McHenry et al. (5770290).

Schulz-Harder discloses a ceramic/metal substrate, comprising a ceramic layer having at least two substrate areas connected to each other as one piece and having at least one metal surface on at least one surface side of the ceramic layer and joining each other on at least one predetermined break line provided for in the ceramic layer (col. 1 lines 59-62). Schulz-Harder discloses that the metal surfaces of the substrate areas are formed by at least one textured or structured metalization on at least one surface area of the ceramic layer (col.4 lines 23-26). Schulz-Harder discloses that at least one textured or structured metalization is produced by applying a metal layer or

Art Unit: 1772

metal foil by a heating process, selected from the group consisting of direct copper bonding and an active soldering (col. 4 lines 12-22). Schulz-Harder discloses that at least part of the substrate areas are single substrates (col. 3 lines 1-3). Schulz-Harder discloses wherein at least one outer metal surface that is provided for on at least one surface of ceramic layer at least along one edge of the ceramic/metal substrate, and by at least one predetermined break line between the at least one outer metal surface and adjacent substrate areas (col. 3 lines 33-50). Schulz-Harder discloses that at least in an area of the single substrate on both surfaces of the ceramic layer at least one metal surface is provided for (col. 2 line 63-67 col.3 line 1) and that the at least one metal surface has, on a first surface area, on a bottom of the ceramic/metal substrate, an edge distance from the adjacent predetermined break line or its plane which edge distance is smaller than the edge distance of the metal surfaces on the second surface area, on a top of the ceramic/metal substrate (figure 1 number 4 and 3'). Schulz-Harder discloses that with several substrate areas or single substrates arranged in several rows, two groups of crossing predetermined break lines are formed (figure 1 number 4 and 3'). Schulz-Harder discloses that the metal substrates on at least one surface area of the ceramic layer has no edge reduction on edges that are adjacent to a group of predetermined break lines (figure 2 number 2 and 3'). Schulz-Harder discloses wherein the single substrates formed by substrate areas are not provided with components (col. 2 lines 63-67 and col. 3 line 1). Schulz-Harder discloses wherein the single substrates formed by substrate areas are provided with electric components (col. 1 lines 23-30).

Art Unit: 1772

Schulz-Harder fails to disclose that at least one metal surface of each substrate areas has at least one edge reduction on one edge adjacent to the predetermined break line and running along this predetermined break line and that the edge reduction is of a form that the mass of metal there per volume unite is reduced 10-80%, with reference to the specific metal mass of a metal surface outside of the edge reduction. Schulz-Harder fails to disclose that the edge reduction of the metal mass area is approximately 0.2 to 6mm. Schulz-Harder fails to disclose that the outer metal surface has an edge reduction along the predetermined break line. Schulz-Harder fails to disclose that the edge having the edge reduction has a distance from the adjacent predetermined break line or a plane of the predetermined break line that is considerable less than 1mm. Schulz-Harder fails to disclose that the edges with the edge reduction have a distance from the respective predetermined break line of approximately 0.05 to 1mm. Schulz-Harder fails to disclose that the textured or structured metalizations, or metal surfaces formed by these, have a thickness of between approximately 0.15 to 1mm. Schulz-Harder fails to disclose that the edge reduction is formed by beveling of the respective edge, the beveling forms an angel smaller than 45 degrees with a plane of the ceramic layer. Schulz-Harder fails to disclose that the edge reduction is formed by hollows or depressions in a material of the metal surfaces. Schulz-Harder fails to disclose that the hollows or depressions are formed continuously, and extend to a surface side of the ceramic layer adjacent to the metal surface. Schulz-Harder fails to disclose that the hollows or depressions are formed in such a way that metal from the metal surface remains on the surface side of the ceramic layer adjacent to the metal surface. Schulz-

Art Unit: 1772

Harder fails to disclose that the edge reduction is formed by a number of hole like depressions that are arranged as a row of holes. Schulz-Harder fails to disclose that the outer and inner depressions form an outer and a second inner row of holes. Schulz-Harder fails to disclose that the depressions have a diameter of approximately 0.5 to 0.6mm. Schulz-Harder fails to disclose the depressions forming a single row of holes have a diameter of 0.5mm, with a width of the edge reduction of approximately 0.8 mm and with a distance of the edge from the predetermined break line of approximately 0.5 mm. Schulz-Harder fails to disclose that the several rows of holes of the outer row of holes have a diameter that is larger than a diameter of the depressions of the inner row of holes, whereby the diameter of the depressions of the outer row of holes is approximately 0.6mm and the diameter of the depressions of the inner row of holes is approximately 0.4mm and the width of the edge reduction is approximately 1.4mm. Schulz-Harder fails to disclose that the edge reduction is formed by a groove-shaped depression. Schulz-Harder fails to disclose that the edge reduction is formed by a graduation of at least one partial area.

Mc Henry et al. teaches a graduation in at least one partial area such as a grooved shaped depression or a beveled edge reduction on a metal surface that is adjacent to the predetermined break line for the purpose of ease of opening and resistance to accidental openings (abstract lines 7-8, col. 1 line 44 figure 3b number 9 and 10). Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to have provided Schulz-Harder with a graduation in at least one partial area such as a grooved shaped depression or a beveled edge

Art Unit: 1772

reduction on a metal surface that is adjacent to the predetermined break line in order to have ease of opening and resistance to accidental openings (abstract lines 7-8, col. 1 line 44 figure 3b number 9 and 10) as taught by Mc Henry et al.

As to the edge reduction formed by hollows, depressions or a number of hole - like depressions, Mc Henry teaches a graduation in at least one partial area such as a grooved shaped depression or a beveled edge reduction. It would have been an obvious matter of design choice to have hollows, depressions, or a number of hole like depressions as edge reduction, since such a modification would have involved a mere change in the shape of a component. A change in shape is generally recognized as being within the level of ordinary skill in the art in absence of unexpected results. *In re Rose*, 105 USPQ 237 (CCPA 1955).

It would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to have hollows or depressions that are formed continuously, and extend to a surface side of the ceramic layer adjacent to the metal surface in such a way that the metal remains on the surface side since it is notoriously known in the art that making hollows or depressions on a metal surface that the hollows or depression would extend to a certain extent to a surface side where the metal can still remain on the surface side if the hollows or depression weren't made to deep.

As to the mass of metal being reduced to 10 to 80% with reference to specific metal mass, the reduced metal mass area being approximately 0.2 to 6mm, edge reduction being approximately 0.8mm or 1.4mm, the distance from the adjacent predetermined break line or a plane of the predetermined break line being considerably

Art Unit: 1772

less than 1mm or approximately 0.5 to 1mm, metal surface having a thickness of approximately 0.15 to 1mm, and the depressions having a diameter of approximately 0.4 to 0.6mm, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have presented these values since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art in absence of unexpected results. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jane J Rhee whose telephone number is 703-605-4959. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon can be reached on 703-308-4251. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Jane Rhee
March 28, 2002


HAROLD PYON
SUPERVISORY PATENT EXAMINER
1772

4/5/02